UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/688,157	10/17/2003	Manish Mangal	2340	9209

28005 7590 12/18/2006

SPRINT
6391 SPRINT PARKWAY
KSOPHT0101-Z2100
OVERLAND PARK, KS 66251-2100

EXAMINER	
ADDY, ANTHONY S	

ART UNIT	PAPER NUMBER
2617	

DATE MAILED: 12/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/688,157	MANGAL ET AL.	
	Examiner	Art Unit	
	Anthony S. Addy	2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 September 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This action is in response to applicant's amendment filed on September 01, 2006. **Claims 1-24** are pending in the present application.

Response to Arguments

2. Applicant's arguments with respect to **claims 1-24** have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 1-6, 8-14 and 16-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Subramanian et al., U.S. Publication Number 2002/0147022 A1 (hereinafter Subramanian)** and **Bansal et al., U.S. Publication Number 2004/0264500 A1 (hereinafter Bansal).**

Regarding claims 1, 9, 16 and 20, Subramanian teaches a CDMA network adapted to provide communication services to multiple mobile stations operating within a given coverage area (see p. 1 [0010], p. 3 [0023] and Fig. 1; shows a wireless communication system 100 adapted to provide communication services to multiple mobile stations 108a-112a coupled to base stations 104a operating within a given coverage area), wherein the system dynamically allocates radio frequency bandwidth among the mobile stations according to a bandwidth allocation algorithm, and wherein

the radio frequency bandwidth is used to send voice or data traffic on a forward supplemental channel from a base station to the mobile stations as part of providing the communication services to the mobile stations (see p. 4 [0030-0031] [i.e. Subramanian teaches the wireless communication system 100 dynamically allocates radio frequency bandwidth among the mobile stations 108a-112a according to a bandwidth allocation algorithm such as a weighted-fair-queuing]), a method comprising: determining that a threshold number of mobile stations being provided communication services are concurrently operating in the given coverage area (see p. 1 [0010] and p. 2 [0013] [i.e. Subramanian's teaching of determining a nominal channel power level and an average effective data rate for example, mobile stations 108a-112a in a given coverage area reads on the limitations "determining that a threshold number of mobile stations being provided communication services are concurrently operating in the given coverage area]).

Subramanian fails to explicitly teach responsively changing the bandwidth allocation algorithm, so as to change how the system dynamically allocates the radio frequency bandwidth among mobile stations.

In an analogous field of Bansal teaches a method and apparatus for policy-based dynamic preemptive scheduling of data transmissions, wherein bandwidth allocations to various flows are dynamically updated by a bandwidth allocation adaptor and a variety of weighted fair queuing algorithms may be used once the dynamic bandwidth allocation algorithm determines the bandwidth allocation for the various flows (see p. 5 [0046] and p. 6 [0055]).

It would therefore have been obvious to one of ordinary skill in the art at the time of the invention to modify Subramanian with Bansal to include a method of responsively changing the bandwidth allocation algorithm, so as to change how the system dynamically allocates the radio frequency bandwidth among mobile stations, in order to dynamically allocate system bandwidth using a wide range of adaptive algorithms that depend upon a nominal channel power level and an average effective data rate of mobile stations in a given coverage area.

Regarding claims 2, 10 and 17, Subramanian in view of Bansal teaches all the limitations of claims 1, 9 and 16. In addition, Subramanian teaches a computer readable medium having stored therein instructions for causing a processor to execute the method of claims 1, 9 and 16 (seep. 2 [0017]).

Regarding claims 6 and 14, Subramanian in view of Bansal teaches all the limitations of claims 1 and 9. Subramanian in view of Bansal further teaches a method, wherein responsively changing the bandwidth allocation algorithm comprises: switching the bandwidth allocation algorithm to use a first bandwidth allocation algorithm to allocate the radio frequency bandwidth among mobile stations within a first group of mobile stations; and switching the bandwidth allocation algorithm to use a second bandwidth allocation algorithm to allocate the radio frequency bandwidth among mobile stations with a second group of mobile stations (see Bansal, p. 5 [0046] and p. 6 [0054-0055).

Regarding claim 18, Subramanian in view of Bansal teaches all the limitations of claim 16. In addition, Subramanian teaches a method, determining that the amount of

voice or data traffic buffered at the base station for transmission to the mobile station as part of providing communication services is below the predetermined threshold; and responsively decreasing the amount of bandwidth allocated to the mobile station for transmitting the communication traffic from the base station to the mobile station (see p. 1 [0010], p. 2 [0013] and p. 4 [0029-0031]).

Regarding claim 19, Subramanian in view of Bansal teaches all the limitations of claim 16. Subramanian in view of Bansal further teaches a method, where the wireless network is a CDMA network (see Subramanian, p. 3 [0023]), and wherein responsively increasing the amount of bandwidth allocated to the mobile station comprises increasing an amount of a forward supplemental channel allocated to the mobile station (see Bansal, see p. 5 [0046] and p. 6 [0054-0055]).

Regarding claims 8 and 24, Subramanian in view of Bansal teaches all the limitations of claims 1 and 20. Subramanian in view of Bansal further teaches a system, wherein the base station uses CDMA to communicate over with air interface with the mobile stations, and wherein the mobile stations are mobile phones (see Subramanian, p. 2 [0012], p. 3 [0023] and Fig. 1).

Regarding claims 3, 4, 5, 11, 12, 13, 21, 22 and 23, Subramanian in view of Bansal teaches all the limitations of claims 1, 9 and 20. Subramanian in view of Bansal further teaches a wide range of adaptive algorithms may be constructed depending upon the particular circumstances of the communication system to support the number of members of the defined groups (see Bansal, p. 5 [0046] and p. 6 [0054-0055]).

The combination of Subramanian and Bansal fails to explicitly teach switching the bandwidth allocation algorithm to a maximum-aggregate-traffic algorithm, common-data-throughput algorithm or a common-power algorithm. However, it would therefore have been obvious to one of ordinary skill in the art at the time of the invention to modify the method and system of Subramanian and Bansal to include, switching the bandwidth allocation algorithm to a maximum-aggregate-traffic algorithm, common-data-throughput algorithm or a common-power algorithm, in order to dynamically allocate system bandwidth using a wide range of adaptive algorithms that depend upon a nominal channel power level and an average effective data rate of mobile stations in a given coverage area.

5. Claims 7 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Subramanian et al., U.S. Publication Number 2002/0147022 A1 (hereinafter Subramanian)** and **Bansal et al., U.S. Publication Number 2004/0264500 A1 (hereinafter Bansal)** as applied to claims 1 and 9 above, and further in view of **Nee et al., U.S. Patent Number 6,876,857 (hereinafter Nee).**

Regarding claims 7 and 15, Subramanian in view of Bansal teaches all the limitations of claims 1 and 9. Subramanian in view of Bansal further teaches a method, wherein determining that a threshold number of mobile stations being provided communication services are concurrently operating in the given coverage area (see p. 1 [0010] and p. 2 [0013]).

The combination of Subramanian and Bansal fails to explicitly teach determining a current time of day; and using a predictive model to determine that the threshold number of mobile stations are concurrently operating in the given coverage area at the current time of day.

Nee, however, teaches a method and system of efficiently allocating bandwidth within a mobile communication network, wherein a time of day information and historic usage data of mobile devices in the communication network are used to more accurately predict the available bandwidth in contiguous cells (see col. 9, lines 9-35 and Fig. 2A). According to Nee, the current bandwidth allocation for a cell together with a predicted bandwidth usage for the time when the session would be requested from that cell can be combined in a weighted fashion to provide a more accurate prediction of the available bandwidth at some time in the future.

It would therefore have been obvious to one of ordinary skill in the art at the time of the invention to modify Subramanian and Bansal with Nee to include a method of determining a current time of day; and using a predictive model to determine that the threshold number of mobile stations are concurrently operating in the given coverage area at the current time of day, in order that an estimation of a current bandwidth allocation for a cell together with a predicted bandwidth usage for the time when the session would be requested from that cell can be combined in a weighted fashion to provide a more accurate prediction of the available bandwidth at some time in the future as taught by Nee.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony S. Addy whose telephone number is 571-272-7795. The examiner can normally be reached on Mon-Thur 8:00am-6:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duc M. Nguyen can be reached on 571-272-7503. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

A.S.A

CHARLES APPIAH
PRIMARY EXAMINER